## **Curriculum Connections – General Capabilities**

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| **STEM CAPABILITY**  | **Description**  | **General Capabilities**  |
| **Collaboration** | Engage in learning partnerships, contribute to and make group decisions, and learn from and contribute to the learning of others Work interdependently in teams to develop team related skills Listen to others’ ideas Understand that others may see things differently to themselves Understands the protocols and roles within a diverse team to ensure effective collaboration | **Work Collaboratively PSC**Level 4 - contribute to groups and teams, suggesting improvements in methods used for group investigations and projectsLevel 5 assess the extent to which individual roles and responsibilities enhance group cohesion and the achievement of personal and group objectives **Make Decisions PSC**Level 4 - identify factors that influence decision making and consider the usefulness of these in making their own decisionsLevel 5 - assess individual and group decision making processes in challenging situations**Collaborate share and exchange ICT** Level 4 - select and use appropriate ICT tools safely to share and exchange information and to safely collaborate with others Level 5 - select and use appropriate ICT tools safely to lead groups in sharing and exchanging information, and taking part in online projects or active collaborations with appropriate global audiences **Understand computer mediated communications ICT**Level 4 - understand that particular forms of computer mediated communications and tools are suited to synchronous or asynchronous (real time or delayed) and one-to-one or group communications Level 5 - understand that there are various methods of collaboration through computer mediated communications that vary in form and control   |
| **Critical Thinking & Problem Solving** | Understand the ​inquiry and design thinking ​processes Ask the right inquiry questions (curiosity) Investigate concepts and source relevant information to expand their knowledge of the world Critically analyse and evaluate information and arguments, seeing patterns and connections Problem solve to construct meaningful knowledge and apply it to the real world Evaluate different strategies, and analyse and reflect on solutions Reflect on their own learning, and articulate their learning process and clarify their thinking | **Pose Question CCT** Level 4 - pose questions to clarify and interpret information and probe for causes and consequencesLevel 5 - pose questions to probe assumptions and investigate complex issues**Identify and clarify information and ideas CCT** Level 4 - identify and clarify relevant information and prioritise ideasLevel 5 - clarify information and ideas from texts or images when exploring challenging issues**Organise and Process information CCT**Level 4 - analyse, condense and combine relevant information from multiple sourcesLevel 5 - critically analyse information and evidence according to criteria such as validity and relevance**Reflect on processes CCT**Level 4 - identify and justify the thinking behind choices they have madeLevel 5 - evaluate and justify the reasons behind choosing a particular problem-solving strategy**Apply Logic and reasoning CCT**Level 4 - assess whether there is adequate reasoning and evidence to justify a claim, conclusion or outcome Level 5 - identify gaps in reasoning and missing elements in information**Draw Conclusions and design a course of action CCT** Level 4 - scrutinise ideas or concepts, test conclusions and modify actions when designing a course of action Level 5 - differentiate the components of a designed course of action and tolerate ambiguities when drawing conclusions**Evaluate procedures and outcomes** Level 4 - evaluate the effectiveness of ideas, products, performances, methods and courses of action against given criteriaLevel 5 - explain intentions and justify ideas, methods and courses of action, and account for expected and unexpected outcomes against criteria they have identified |
| **Creativity & Innovation** | Envision a range of creative solutions to real world problems Construct authentic, rich learning contexts/tasks/solutions Use design thinking tools in the creation of new solutions or productsHave an entrepreneurial approach to identify, promote and action opportunities, be they for social or economic purposes | **Imagine possibilities and connect ideas CCT**Level 4 - combine ideas in a variety of ways and from a range of sources to create new possibilities Level 5 - draw parallels between known and new ideas to create new ways of achieving goals**Consider alternatives** Level 4 - identify situations where current approaches do not work, challenge existing ideas and generate alternative solutions Level 5 - generate alternatives and innovative solutions, and adapt ideas, including when information is limited or conflicting **Seek solutions and put ideas into action** Level 4 - assess and test options to identify the most effective solution and to put ideas into actionLevel 5 - predict possibilities, and identify and test consequences when seeking solutions and putting ideas into action |
| **Communication** | Have respectful conversations with a range of people Clearly communicate their design thinking and the learning process Use of multi-modal tools to effectively communicate and adapt to the audience Apply and articulate the numeracy skills and make connections with the learning Apply a range of literacy skills to express the learning  | **Communicate effectively PSC**Level 4 - identify and explain factors that influence effective communication in a variety of situations Level 5 - analyse enablers of and barriers to effective verbal, nonverbal and digital communication**Use language to interact with others - Literacy**Level 4 - use pair, group and class discussions and informal debates as learning tools to explore ideas and relationships, test possibilities, compare solutions and to prepare for creating textsLevel 5 - use pair, group and class discussions and formal and informal debates as learning tools to explore ideas, test possibilities, compare solutions, rehearse ideas and arguments in preparation for creating texts**Deliver presentations Literacy** Level 4 - plan, research, rehearse and deliver presentations on learning area topics, selecting appropriate content and visual and multimodal elements to suit different audiencesLevel 5- plan, research, rehearse and deliver presentations on learning area topics, sequencing selected content and multimodal elements for accuracy and their impact on the audience |
| **Citizenship** | Demonstrate empathy to, and understand the ideals and issues of, other cultures and the environment Consider global issues based on a ​***deep*** understanding of diverse values and take action on human and environmental issues Consider the short term and long-term effects of actions on personal, environmental and global levels Demonstrate responsible and ethical practices in digital environments | **Appreciated Diverse Perspectives PSC**Level 4 - explain how means of communication differ within and between communities and identify the role these play in helping or hindering understanding of othersLevel 5 - acknowledge the values, opinions and attitudes of different groups within society and compare to their own points of view**Explore rights and responsibilities EU**Level 4 - monitor consistency between rights and responsibilities when interacting face-to-face or through social media Level 5 - analyse rights and responsibilities in relation to the duties of a responsible citizen**Consider points of view EU**Level 4 - explain a range of possible interpretations and points of view when thinking about ethical dilemmasLevel 5 - draw conclusions from a range of points of view associated with challenging ethical dilemmas**Apply personal security protocols ICT**Level 4 - identify the risks to identity, privacy and emotional safety for themselves when using ICT and apply generally accepted social protocols when sharing information in online environments, taking into account different social and cultural contexts Level 5 - identify and value the rights to identity, privacy and emotional safety for themselves and others when using ICT and apply generally accepted social protocols when using ICT to collaborate with local and global communities |
| **Character** | Effectively participate as a team member and know their own capacities to fulfil different team roles Demonstrate growth mindset Pursue their personal best no matter who they work with Demonstrate perseverance to overcome challenges and obstacles, and apply a variety of strategies to solve problems Support, encourage and motivate others Self-directed learner/readiness and willingness to learn Willing to try new things and take risks, knowing that they might not be successful, and accepting and learning from failure Describe personal and learning strengths and challenges, that includes skills to be developed and goals to guide personal development | **Develop reflective practice PSC** Level 4 - monitor their progress, seeking and responding to feedback from teachers to assist them in consolidating strengths, addressing weaknesses and fulfilling their potentialLevel 5 - predict the outcomes of personal and academic challenges by drawing on previous problem solving and decision-making strategies and feedback from peers and teachers**Develop self-discipline and set goals PSC**Level 4 - analyse factors that influence ability to self-regulate; devise and apply strategies to monitor own behaviour and set realistic learning goalsLevel 5 - select, use and analyse strategies that assist in regulating behaviour and achieving personal and learning goals**Become confident resilient and adaptable PSC**Level 4 - devise strategies and formulate plans to assist in the completion of challenging tasks and the maintenance of personal safety Level 5 - assess, adapt and modify personal and safety strategies and plans, and revisit tasks with renewed confidence**Understand themselves as learners PSC**Level 4- identify preferred learning styles and work habitsLevel 5 - identify and choose a range of learning strategies appropriate to specific tasks and describe work practices that assist their learning |

## **Curriculum Connections – Learning areas**

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| **Science** | **Technologies** | **Mathematics** |
| Year 8 and 9* Earth and space sciences
* Physical sciences

Year 7* Earth and space sciences
* Physical sciences

Year 6* Biological sciences
* Earth and space sciences
* Physical sciences

All Year Levels* Science Inquiry Skills
* Science as a Human Endeavour
 | All Year LevelsDesign and Technologies:* Knowledge and Understanding
* Processes and Production skills

Digital Technologies:* Processes and Production skills
 | Year 8 and 9* Measurement
* Data Representation and Interpretation

Year 7* Measurement
* Data Representation and Interpretation

Year 6* Measurement
* Data Representation and Interpretation
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| Year 8Energy appears in different forms, including movement (kinetic energy), heat and potential energy, and energy transformations and transfers cause change within systems (ACSSU155)Year 7Some of Earth’s resources are renewable, including water that cycles through the environment, but others are non-renewable (ACSSU116)Change to an object’s motion is caused by unbalanced forces, including Earth’s gravitational attraction, acting on the object (ACSSU117)Year 6Electrical energy can be transferred and transformed in electrical circuits and can be generated from a range of sources [(ACSSU097](http://www.scootle.edu.au/ec/search?accContentId=ACSSU097))The growth and survival of living things are affected by physical conditions of their environment [(ACSSU094](http://www.scootle.edu.au/ec/search?accContentId=ACSSU094))All*Science Inquiry Skills* including:Questioning and predictingPlanning and conductingProcessing and analysing data and informationEvaluatingCommunicating*Science as a Human Endeavour* including:Use and influence of ScienceNature and development of Science | Years 7 and 8Investigate the ways in which products, services and environments evolve locally, regionally and globally and how competing factors including social, ethical and sustainability considerations are prioritised in the development of technologies and designed solutions for preferred futures (ACTDEK029)Analyse how motion, force and energy are used to manipulate and control electromechanical systems when designing simple, engineered solutions (ACTDEK031)Analyse ways to produce designed solutions through selecting and combining characteristics and properties of materials, systems, components, tools and equipment (ACTDEK034)Critique needs or opportunities for designing and investigate, analyse and select from a range of materials, components, tools, equipment and processes to develop design ideas [(ACTDEP035](http://www.scootle.edu.au/ec/search?accContentId=ACTDEP035))Generate, develop, test and communicate design ideas, plans and processes for various audiences using appropriate technical terms and technologies including graphical representation techniques [(ACTDEP036](http://www.scootle.edu.au/ec/search?accContentId=ACTDEP036))Select and justify choices of materials, components, tools, equipment and techniques to effectively and safely make designed solutions[(ACTDEP037](http://www.scootle.edu.au/ec/search?accContentId=ACTDEP037)Independently develop criteria for success to evaluate design ideas, processes and solutions and their sustainability [(ACTDEP038](http://www.scootle.edu.au/ec/search?accContentId=ACTDEP038))Use project management processes when working individually and collaboratively to coordinate production of designed solutions [(ACTDEP039)](http://www.scootle.edu.au/ec/search?accContentId=ACTDEP039) Acquire data from a range of sources and evaluate authenticity, accuracy and timeliness [(ACTDIP025](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP025))Analyse and visualise data using a range of software to create information, and use structured data to model objects or events [(ACTDIP026](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP026))Define and decompose real-world problems taking into account functional requirements and economic, environmental, social, technical and usability constraints [(ACTDIP027](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP027))Evaluate how student solutions and existing information systems meet needs, are innovative, and take account of future risks and sustainability [(ACTDIP031](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP031))Plan and manage projects that create and communicate ideas and information collaboratively online, taking safety and social contexts into account [(ACTDIP032](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP032))Year 6Examine how people in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use [(ACTDEK019](http://www.scootle.edu.au/ec/search?accContentId=ACTDEK019))Investigate how electrical energy can control movement, sound or light in a designed product or system [(ACTDEK020](http://www.scootle.edu.au/ec/search?accContentId=ACTDEK020))Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use [(ACTDEK023](http://www.scootle.edu.au/ec/search?accContentId=ACTDEK023))Critique needs or opportunities for designing, and investigate materials, components, tools, equipment and processes to achieve intended designed solutions [(ACTDEP024](http://www.scootle.edu.au/ec/search?accContentId=ACTDEP024))Generate, develop and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques [(ACTDEP025](http://www.scootle.edu.au/ec/search?accContentId=ACTDEP025))Select appropriate materials, components, tools, equipment and techniques and apply safe procedures to make designed solutions [(ACTDEP026](http://www.scootle.edu.au/ec/search?accContentId=ACTDEP026))Negotiate criteria for success that include sustainability to evaluate design ideas, processes and solutions [(ACTDEP027](http://www.scootle.edu.au/ec/search?accContentId=ACTDEP027))Develop project plans that include consideration of resources when making designed solutions individually and collaboratively [(ACTDEP028](http://www.scootle.edu.au/ec/search?accContentId=ACTDEP028))Examine the main components of common digital systems and how they may connect together to form networks to transmit data [(ACTDIK014](http://www.scootle.edu.au/ec/search?accContentId=ACTDIK014))Acquire, store and validate different types of data, and use a range of software to interpret and visualise data to create information [(ACTDIP016)](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP016) Define problems in terms of data and functional requirements drawing on previously solved problems [(ACTDIP017](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP017))Explain how student solutions and existing information systems are sustainable and meet current and future local community needs [(ACTDIP021](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP021))Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols [(ACTDIP022](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP022)) | Year 8Solve problems involving the surface area and volume of right prisms [(ACMMG218](http://www.scootle.edu.au/ec/search?accContentId=ACMMG218))Investigate techniques for collecting data, including census, sampling and observation [(ACMSP284](http://www.scootle.edu.au/ec/search?accContentId=ACMSP284))Investigate the effect of individual data values, including outliers, on the mean and median [(ACMSP207](http://www.scootle.edu.au/ec/search?accContentId=ACMSP207))Year 7Establish the formulas for areas of rectangles, triangles and parallelograms, and use these in problem-solving [(ACMMG159](http://www.scootle.edu.au/ec/search?accContentId=ACMMG159))Identify and investigate issues involving numerical data collected from primary and secondary sources [(ACMSP169)](http://www.scootle.edu.au/ec/search?accContentId=ACMSP169) Choose appropriate units of measurement for area and volume and convert from one unit to another [(ACMMG195](http://www.scootle.edu.au/ec/search?accContentId=ACMMG195))Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites [(ACMMG196](http://www.scootle.edu.au/ec/search?accContentId=ACMMG196))Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving circumference and area [(ACMMG197)](http://www.scootle.edu.au/ec/search?accContentId=ACMMG197)Develop formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving volume [(ACMMG198](http://www.scootle.edu.au/ec/search?accContentId=ACMMG198))Calculate areas of composite shapes [(ACMMG216)](http://www.scootle.edu.au/ec/search?accContentId=ACMMG216)Calculate the surface area and volume of cylinders and solve related problems [(ACMMG217](http://www.scootle.edu.au/ec/search?accContentId=ACMMG217))Construct and compare a range of data displays including stem-and-leaf plots and dot plots [(ACMSP170](http://www.scootle.edu.au/ec/search?accContentId=ACMSP170))Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data [(ACMSP171)](http://www.scootle.edu.au/ec/search?accContentId=ACMSP171) Describe and interpret data displays using median, mean and range [(ACMSP172](http://www.scootle.edu.au/ec/search?accContentId=ACMSP172))Year 6Connect decimal representations to the metric system [(ACMMG135](http://www.scootle.edu.au/ec/search?accContentId=ACMMG135))Convert between common metric units of length, mass and capacity [(ACMMG136](http://www.scootle.edu.au/ec/search?accContentId=ACMMG136))Solve problems involving the comparison of lengths and areas using appropriate units [(ACMMG137](http://www.scootle.edu.au/ec/search?accContentId=ACMMG137))Connect volume and capacity and their units of measurement [(ACMMG138](http://www.scootle.edu.au/ec/search?accContentId=ACMMG138))Compare observed frequencies across experiments with expected frequencies [(ACMSP146](http://www.scootle.edu.au/ec/search?accContentId=ACMSP146))Interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables [(ACMSP147](http://www.scootle.edu.au/ec/search?accContentId=ACMSP147))Interpret secondary data presented in digital media and elsewhere [(ACMSP148)](http://www.scootle.edu.au/ec/search?accContentId=ACMSP148)  |

Note: Additional learning engagements and teaching strategies can be found within other learning areas including, in particular, the Geography component of HASS